Jan. 15, 1935. S. STEIN 1,988,055

ROLLER SKATE

Filed June 11, 1931

Fig.1

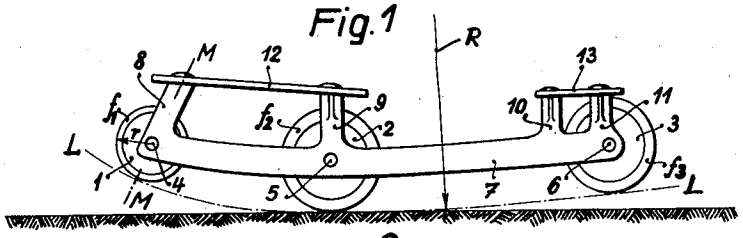


Fig.2

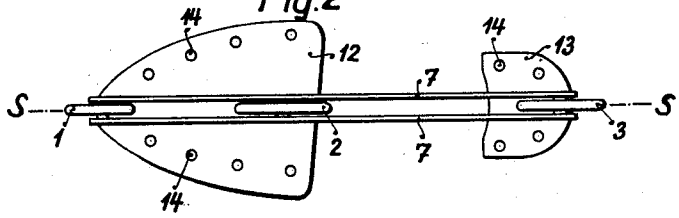


Fig.3

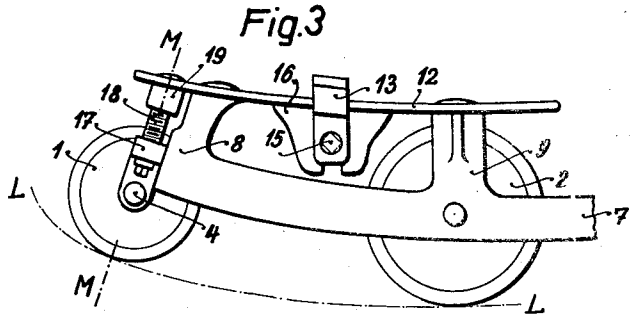
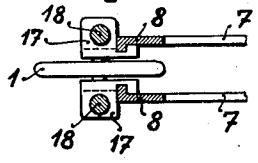


Fig.4



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ROLLER SKATE

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2 Claims. (Cl. 208—175)

This invention relates to a new and improved roller-skate which is particularly adapted for exhibition skating. The roller-skate in accordance with the invention enables roller-skating to be practised in a manner very similar to that of exhibition skating on ice as practised with the standard type of exhibition skate as originally produced under the name of "Jackson-Haines".

The roller-skate provided by the invention is fitted with running wheels with rubber rims or tyres and of a breadth approximately equal to that of the running edge of an exhibition ice skate. The running surfaces of these wheels are in accordance with the present invention so arranged that the same can be circumscribed by a cylindrical surface the line of intersection of which with the plane of symmetry of the roller-skate is of the same shape as the so-called Jackson curve.

Roller-skates with a plurality of runnng wheels of different diameters have already become known. These hitherto known types of construction embody either a restricted number (3 to 5) of comparatively large running wheels or a relatively large number (up to 9) of wheels with comparatively small diameter. No one of these hitherto known types of construction, however, possesses an imaginary running edge having the same shape and location in respect to the foot and the ground surface as the running edge of the Jackson skate. For this reason none of the known types of construction for roller-skates embodies the arrangement of three running wheels at such positions on the skate that the same points of support are afforded to the skater on the displacement of the weight of the body from back to front as with the Jackson skate in ice skating, and as with the roller-skate provided by the present invention. The majority of the hitherto known forms of construction, in consequence of the large number of rollers employed or of the provision of sprung soles, special braking devices, and adjustable means for the attachment of the skate to the shoe, are heavy and expensive, and apt to become clogged and damaged by dirt. All the disadvantages mentioned are avoided or obviated by the present invention.

Examples of the carrying out of the invention are illustrated in the accompanying drawing, in which

Fig. 1 shows one form of the roller-skate in accordance with the invention, in side elevation,

Fig. 2 is a corresponding view from below.

Fig. 3 shows a modified form, in elevation.

Fig. 4 is a cross section above the roller vertically to the direction M—M of Fig. 3.

Referring to Figs. 1 and 2, the running wheels are denoted by the reference characters 1, 2, and 3. The plane of symmetry of the roller-skate is indicated by S—S. The surface circumscribed about the running surfaces f_1, f_2, and f_3 of the three running wheels constitutes a cylindrical surface the line of intersection of which with the plane of view in Fig. 1 is denoted by L—L. In accordance with the invention this line of intersection L—L is identical with the curve of the running edge of the Jackson-Haines skate, that is to say of the standard type of skate for exhibition ice skating.

In accordance with the invention the imaginary running edge of the roller-skate is so shaped that the line of intersection L—L shown in Fig. 1 is made up of two arcs the radii R and r of which are so determined that the ratio of the one radius to the other is such as to satisfy the requirements of the ideal running edge curve of the Jackson skate. For the purposes of the present invention, and in order not to limit the same to the employment of one particular ratio, this required ratio between the radii R and r may be characterized as lying between

$$\frac{R}{r}=40$$

and

$$\frac{R}{r}=0.$$

As will be seen from Fig. 2, the running wheels 1, 2, and 3 are attached to shafts 4, 5, and 6 which are mounted in a common combining frame 7. This combining frame 7 may be provided with supports 8, 9, 10, and 11 for the two front and for the back running wheels, these supports being formed in one piece with the said frame. The supports 8—11 are connected in any suitable manner, e. g. by riveting, to supporting or bearing surfaces for shoes. These plates are provided, in the manner known in connection with ice skates, with holes 14 for screws for the attachment of the roller-skate to the sole and heel of the shoe.

In accordance with the invention the sole plate is provided at the toe end with a smaller running wheel 1, and in the middle and at the heel end running wheels, 2 and 3 respectively, of larger diameter. In exact compliance with the principles of support and transmission of force incorporated in the Jackson skate, these three running

wheels 1, 2, and 3 are arranged at such positions on the skate, or in relation to the foot, as are calculated to afford to the skater, during the transference of the weight of the body from front to back and vice versa, the same points of support as are afforded to an ice skater when employing the Jackson skate.

Without departing from the scope of the invention, it is also possible for special cases, e. g. for beginners, to provide an additional wheel between the running wheels 1 and 2 and 2 and 3, respectively. For the experienced exhibition roller-skater, however, the arrangement embodying merely three running wheels is sufficient.

In the normal exhibition skate for ice skating it is well known that the forward curved up portion of the running edge is used in the carrying out of the figures included under exhibition skating. This portion of the running edge follows a curve of a considerably smaller radius than that of the rear portion of the running edge.

For the purpose of copying these proportions as nearly as possible in the roller-skate, the radius of curvature of the forward running wheel is selected, in a manner known per se, smaller than the radius of curvature of the two rear running wheels. In order to obtain the correct distribution of the skater's weight when the front wheel is bearing the weight, the invention further provides for the direction of the front support 8 to be such that the mid-line M—M of the same when extended intersects the imaginary running surface L—L in the point of contact of the latter with the periphery of the front wheel 1.

The described arrangement of the supports relative to the front running wheel has for its object to obtain precisely the same kinematic conditions during skating on the forward portion of the roller-skate as during skating on the forward portion of the running edge of the Jackson ice skate.

In the form of construction shown in Fig. 3, 1 denotes the front wheel and 2 the wheel adjacent the front wheel. The rear portion of the roller-skate is broken away. 7 is the combining frame on the front supports 8 and 9 of which the bearing plate 12 rests. The attachment of the roller-skate to the front portion of the shoe is in this example effected by means of clamping jaws 13 which can be adjusted by means of a square section pin 15 provided on an extension with right- and left-hand threaded portions. The guides for the clamping jaws are denoted by 16. To each end of the axle 4 there is attached a bearing member 17 which can be adjusted relatively to the support 8 by means of a screw 18. For this purpose the screws 18 are rotatably mounted in lugs 19 on the boot plate 12. The members 17 are guided during its movement by the support 8.

In this manner a very accurate and individual adjustment of the front running wheel to suit the requirements of every skater can be effected. Tests have proved that with the above described roller-skate the most difficult figures and curves in exhibition skating can be carried out, with good stability on the skates. The same technical skill can be developed with this roller-skate as with ice skates, which implies an advance in roller-skating in general, and in particular for the southern and tropical countries in which ice skating is not feasible.

I claim:—

1. A roller skate in particular for exhibition skating embodying a slightly longitudinal curved frame member, a front sole plate, a heel plate, two pairs of separate upright supports rising from the frame member for respectively supporting the sole and heel plates, at least three running wheels of different diameters mounted on the frame member, the foremost running wheel having a smaller diameter than the rearward running wheels, the foremost and middle running wheels being situated adjacent the junctures of the uprights for the sole plate with the frame member, the rear running wheel being situated beneath the heel plate and the foremost upright being inclined rearwardly so that the foremost wheel on being subjected to the weight of the skater will only be subjected to pressure.

2. A roller skate according to claim 1, wherein means is provided for adjustably mounting the foremost running wheel, comprising an axle for the front wheel, a bearing member for the axle adjustably mounted for vertical movement and at the front end of the foremost support, and a screw spindle rotatably mounted in the sole plate and adjustably engaged with the bearing member for the purpose of adjusting the running curve of the roller skate as desired.

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